

I claim:

1. A composite protective yarn for being incorporated into an article of apparel, said protective yarn comprising:

(a) a core unit comprising a protective material selected from a group consisting of metallic, glass, and high tenacity fiber having a tensile strength of at least 7 grams per denier; and

(b) a cover applied to said core unit and adapted for residing adjacent the skin, said cover comprising an optically responsive material adapted for absorbing infrared radiation emitted from the human body at a first wavelength and returning the absorbed radiation to the body at a second longer wavelength, thereby relaxing capillaries and promoting increased blood flow to body parts covered by the article of apparel.

2. A protective yarn according to claim 1, wherein said cover comprises a powder and carrier material, said powder including elements selected from a group consisting of silicones, carbons, and vitreous glasses.

3. A protective yarn according to claim 2, said vitreous glasses are selected from a group consisting of oxides of aluminum, titanium, silicone, boron, calcium, sodium, and lithium.

4. A protective yarn according to claim 2, said carrier material comprises a polymer resin.

5. A protective yarn according to claim 4, wherein said resin is selected from a group consisting of rayon, polyester, nylon, acrylic, polyamide, and polyimide.
6. A protective yarn according to claim 1, wherein said cover comprises a powder and polymer resin composition extruded to form a continuous filament cover strand adapted for wrapping around and encasing said core unit, said powder including elements selected from a group consisting of silicones, carbons, and vitreous glasses.
7. A protective yarn according to claim 1, wherein the metallic filament of said core unit comprises a flexible stainless steel strand having a diameter in a range of between 6 microns and 120 microns.
8. A protective yarn according to claim 1, wherein said core unit further comprises a fiber selected from a group consisting of poly {p-phenylene-2, 6-benzobisoxazole} (PBO), polyethylene, polyester, copolyesters, aramid, liquid crystal polymer fibers, polyamides, PVA-based fibers, polysulfide fibers, and synthetically produced silk fibers.
9. A protective yarn according to claim 1, wherein said core unit further comprises a fiber selected from a group consisting of natural organic and inorganic fibers.

10. A protective yarn according to claim 1, wherein said cover further comprises a multi-filament fiber strand selected from a fiber group consisting of poly {p-phenylene-2, 6-benzobisoxazole} (PBO), polyethylene, polyester, copolyesters, aramid, liquid crystal polymer fibers, polyamides, PVA-based fibers, polysulfide fibers, and synthetically produced silk fibers.

11. A protective yarn according to claim 1, wherein said cover further comprises a multi-filament fiber strand selected from a fiber group consisting of natural organic and inorganic fibers.

12. A protective yarn for being incorporated into an article of apparel, said protective yarn comprising:

(a) a core unit comprising a protective material selected from a group consisting of metallic filament, glass, and high tenacity fiber having a tensile strength of at least 7 grams per denier; and

(b) a cover applied to said core unit and adapted for residing adjacent the skin, said cover comprising an optically responsive material adapted for absorbing infrared radiation emitted from the human body at a first wavelength and returning the absorbed radiation to the body at a second longer wavelength, thereby relaxing capillaries and promoting increased blood flow to body parts covered by the article of apparel, and said optically responsive material comprising a resin composition extruded to form a continuous filament cover strand adapted for wrapping around and encasing said core unit.

13. An article of apparel including a protective, flexible yarn comprising:
- (a) a core unit comprising a protective material selected from a group consisting of metallic filament, glass, and high tenacity fiber having a tensile strength of at least 7 grams per denier; and
  - (b) a cover applied to said core unit and adapted for residing adjacent the skin, said cover comprising an optically responsive material adapted for absorbing infrared radiation emitted from the human body at a first wavelength and returning the absorbed radiation to the body at a second longer wavelength, thereby relaxing capillaries and promoting increased blood flow to body parts covered by the article of apparel.
14. An article of apparel according to claim 13, wherein said cover comprises a powder and carrier material, said powder including elements selected from a group consisting of silicones, carbons, and vitreous glasses.
15. An article of apparel according to claim 14, said vitreous glasses are selected from a group consisting of oxides of aluminum, titanium, silicone, boron, calcium, sodium, and lithium.
16. An article of apparel according to claim 14, said carrier material comprises a polymer resin.

17. An article of apparel according to claim 16, wherein said resin is selected from a group consisting of rayon, polyester, nylon, acrylic, polyamide, and polyimide.

18. An article of apparel according to claim 13, wherein said cover comprises a powder and polymer resin composition extruded to form a continuous filament cover strand adapted for wrapping around and encasing said core unit, said powder including elements selected from a group consisting of silicones, carbons, and vitreous glasses.

19. An article of apparel according to claim 13, wherein the metallic filament of said core unit comprises a flexible stainless steel filament having a diameter in a range of between 6 microns and 125 microns.

20. An article of apparel according to claim 13, wherein said article comprises a protective glove.

21. A multi-component protective fabric adapted for incorporating into an article of apparel, said fabric comprising:

(a) an inner fabric layer comprising a yarn adapted for residing primarily adjacent the skin, said yarn including an optically responsive material adapted for absorbing infrared radiation emitted from the human body at a first wavelength and returning the absorbed radiation to the body at a second longer wavelength, thereby relaxing capillaries and promoting increased blood flow to body parts covered by the article of apparel;

(b) an outer fabric layer comprising a yarn including a protective material selected from a group consisting of metallic, glass, and high tenacity fiber having a tensile strength of at least 7 grams per denier; and

(c) wherein said inner and outer fabric layers are formed concurrently by knitting a plaited construction.

22. A protective fabric according to claim 21, wherein the yarn of said inner fabric layer comprises a powder and carrier material, said powder including elements selected from a group consisting of silicones, carbons, and vitreous glasses.

23. A protective fabric according to claim 21, wherein the yarn of said outer fabric layer comprises a fiber selected from a group consisting of poly {p-phenylene-2, 6-benzobisoxazole} (PBO), polyethylene, polyester, copolyesters, aramid, liquid crystal polymer fibers, polyamides, PVA-based fibers, polysulfide fibers, and synthetically produced silk fibers.